

- II. "On a Meteoric Stone found at Makariwa, near Invercargill, New Zealand." By G. H. F. ULRICH, F.G.S., Professor of Mining and Mineralogy in the University of Dunedin, N.Z. Communicated by Professor J. W. JUDD, F.R.S. Received December 14, 1892.

(Abstract.)

The specimen described in this memoir was found in the year 1879 in a bed of clay which was cut through in making a railway at Invercargill, near the southern end of the Middle Island of New Zealand. Originally this meteorite appears to have been about the size of a man's fist, and to have weighed 4 or 5 lbs., but it was broken up, and only a few small fragments have been preserved. The stone evidently consisted originally of an intimate admixture of metallic matter (nickel iron) and of stony material, but much of the metallic portion has undergone oxidation. Microscopic examination of thin sections shows that the stony portion, which is beautifully chondritic in structure, contains olivine, enstatite, a glass, and probably also magnetite, and through these stony materials the nickel iron and troilite are distributed. The specific gravity of portions of the stone was found to vary between 3.31 and 3.54, owing to the unequal distribution of the metallic particles. A partial chemical examination of this meteorite was made by the author and Mr. James Allen, but the complete analysis has been undertaken by Mr. L. Fletcher, F.R.S., of the British Museum. The analysis, which when finished will be communicated to this Society, has gone so far as to show that the percentage mineral composition of the Makariwa meteorite may be expressed approximately by the following numbers: nickel iron 1, oxides of nickel and iron 10, troilite 6, enstatite 39, olivine 44.

- III. "On Operators in Physical Mathematics. Part I." By OLIVER HEAVISIDE, F.R.S. Received December 15, 1892.

Connexion between a Flux and a Force through an Operator.

1. In the investigation of physical questions we often have to answer such a question as this: Given a force f , a function of the time, acting at one place in a connected system, find the effect F , of some given type, produced by the force at its own or some other place. Or it may be that it is not an impressed force that is given, but displacement of some kind. Or, in order to produce mathe-